REMARKS

STATUS OF THE CLAIMS

Claims 1-20 have been pending in the application.

Claims 17 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Hotta (U.S. Patent No. 6,345,119).

Claims 1-16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hotta (U.S. Patent No. 6,345,119) and further in view of Shirasaki (U.S. Patent No. 6,341,176).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hotta (U.S. Patent No. 6,345,119) and further in view of Arai et al. (U.S. Patent No. 6,697,524).

According to the foregoing, the claims are amended, claims 1, 3, 5, 7, 9, 11, 13 and 17-20 are cancelled without disclaimer or prejudice, new claim 21 is added, and, thus, reconsideration of the pending claims is respectfully requested.

No new matter is added in this Amendment.

REJECTIONS

The independent claims have been 1, 2, 15, 16 and 17, of which independent claims 1, 2, 15 and 16 were rejected over Hotta and Shirasaki. Independent claim 17 was rejected as being anticipated by Hotta.

According to the foregoing, the independent claims 1 and 17 are cancelled, and independent claims 2, 15 and 16 are amended. Thus, independent claims are 2, 15 and 16 remain pending for reconsideration.

Office Action page 2 is the Response to Arguments. The Office Action Response to Arguments alleges Hotta discusses the character recognition is based upon both clustering of feature vector of characters and based upon recognized characters. In other words, it is understood the Office Action alleges Hotta's discussion of "character recognition based upon the recognized characters," can meet the claimed present invention's "where the recognized characters of the respective algorithms are non-coinciding for some corresponding same locations of the text image and coincide for other corresponding same locations of the text image" and "an extraction unit extracting the locations corresponding to the non-coinciding characters recognized by the respective recognition algorithms."

However, the independent claims, using claim 2 as an example, are amended for clarity, as follows:

    2.   (CURRENTLY AMENDED) A character recognition device to recognize characters in a captured text image, comprising:

    a first recognition unit to recognize the characters in the text image using a first character recognition algorithm;

    a second recognition unit to recognize the characters in the text image using a second character recognition algorithm different from the first character recognition algorithm, where each character recognition algorithm produces ~~its own~~a first and a second character recognition result, respectively, including recognized characters from the same text image ~~and where the recognized characters of the respective algorithms are non-coinciding for some corresponding same locations of the text image and coincide for other corresponding same locations of the text image~~;

    an extraction unit to extract a location from the different algorithm first and second character recognition results where character recognitions from the different algorithm first and second character recognition results do not coincide with each other,

    wherein if the extracted non-coinciding location has a different number of recognized characters, to output at the extracted non-coinciding location recognized characters based upon either the first character recognition result or the second character recognition result according to a prescribed standard, and

    wherein if the extracted non-coinciding location has a same number of recognized characters, to output at the extracted non-coinciding location recognized characters with a higher evaluation value according to the first and second character recognition results ~~extracting the locations corresponding to the non-coinciding characters recognized by the respective recognition algorithms~~; and

    an output unit ~~designating~~to output the recognized characters while designating the extracted non-coinciding location of the non-coinciding character recognitions by the first and second character recognition algorithms ~~locations of non-coinciding results extracted by the extraction unit and outputting character recognition results for the text image~~.

For example, the present Application page 22, line 1 to page 25, line 15 and FIGS. 5 (steps 17, 18), 9 and 10, provide support for the claim amendments.

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It is readily apparent Hotta cannot anticipate or render obvious the claimed present invention, because Hotta is silent on the claimed present invention's:

...

> a second recognition unit to recognize the characters in the text image using ***a second character recognition algorithm different from the first character recognition algorithm, where each character recognition algorithm produces*** ~~*its own*~~***a first and a second character recognition result, respectively, including*** recognized characters from the same text image;

> an extraction unit ***to extract a location from the different algorithm first and second character recognition results where character recognitions from the different algorithm first and second character recognition results do not coincide*** with each other,

> wherein ***if the extracted non-coinciding location has a different number of recognized characters, to output*** at the extracted non-coinciding location recognized characters based upon either the first character recognition result or the second character recognition result according to a prescribed standard, and

> wherein ***if the extracted non-coinciding location has a same number of recognized characters, to output*** at the extracted non-coinciding location recognized characters with a higher evaluation value according to the first and second character recognition results ~~extracting the locations corresponding to the non-coinciding characters recognized by the respective recognition algorithms~~; and

> an output unit ~~designating~~***to output the recognized characters while designating*** the ***extracted non-coinciding location of the non-coinciding character recognitions by the first and second character recognition algorithms***.

Typically, a character recognition apparatus recognizes a character category of an input character by matching the features of an input character against the features of the character category entered in the dictionary (Hotta, column 1, lines 30-33). See also, the present Application, FIG. 1 and the recognition glossaries 13 and 16 as character dictionaries used for recognizing an input character. Hotta relates to efficient use of a dictionary (present Application glossaries 13, 16) for character recognition (Hotta, columns 3-4 and FIGS. 4 and 6), which differs from the claimed present invention's "... *a second character recognition algorithm different from the first character recognition algorithm, where each character recognition algorithm produces* ~~*its own*~~*a first and a second character recognition result, respectively,*

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including recognized characters from the same text image; an extraction unit *to extract a location from the different algorithm first and second character recognition results where character recognitions from the different algorithm first and second character recognition results do not coincide* with each other, ... *if the extracted non-coinciding location has a different number of recognized characters, to output* at the extracted non-coinciding location recognized characters based upon either the first character recognition result or the second character recognition result according to a prescribed standard, ... *if the extracted non-coinciding location has a same number of recognized characters, to output* at the extracted non-coinciding location recognized characters with a higher evaluation value according to the first and second character recognition results; and an output unit *to output the recognized characters while designating* the *extracted non-coinciding location of the non-coinciding character recognitions by the first and second character recognition algorithms.*"

In particular, the Office Action Response to Arguments relies on Hotta, FIG. 29 and column 29, lines 20-29, which discusses limiting the amended-to category of the hand-written character discriminated as 4 to 6 or 9, not to 1 or 3, because experimentally the handwritten character 4 may not be misrecognized for 1 or 3, thus relating to efficient use of a dictionary for character recognition, but not the claimed present invention's "an extraction unit *to extract a location from the different algorithm first and second character recognition results where character recognitions from the different algorithm first and second character recognition results do not coincide* with each other, ... *if the extracted non-coinciding location has a different number of recognized characters, to output* at the extracted non-coinciding location recognized characters *based upon either the first character recognition result or the second character recognition result according to a prescribed standard*, ... *if the extracted non-coinciding location has a same number of recognized characters, to output* at the extracted non-coinciding location *recognized characters with a higher evaluation value according to the first and second character recognition results*; and an output unit *to output the recognized characters while designating* the *extracted non-coinciding location of the non-coinciding character recognitions by the first and second character recognition algorithms.*" Therefore, Hotta cannot anticipate the claimed present invention, because Hotta fails to disclose, either expressly or inherently, each and every element of the

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claimed present invention's "*extraction unit*" and "*output unit*" as recited in independent claims 1, 15 and 16.

And Shirasaki fails to render obvious the claimed present invention, because the Office Action Response to Arguments and page 6 acknowledges relying on Shirasaki for the claimed present invention's "*to output the recognized characters while designating the extracted non-coinciding location of the non-coinciding character recognitions by the first and second character recognition algorithms*." However, Shirasaki fails to disclose or suggest the claimed present invention's designation based upon "*extracted non-coinciding location of the non-coinciding character recognitions by the first and second character recognition algorithms*," because Shirasaki fails to disclose or suggest using "*a second character recognition algorithm different from the first character recognition algorithm, where each character recognition algorithm produces its owna first and a second character recognition result, respectively, including recognized characters from the same text image*." Shirasaki column 1, lines 58-62 and column 14, line 51 to column 15, line 22 (FIG. 2, steps A6-A7) discuss correcting a character improperly recognized by the character recognizing apparatus based upon "perform a full text search up to the end of the document to correct the misrecognized characters" (step A7), but fails to provide any suggestion or motivation to modify Hotta to achieve the claimed present invention by providing "...*to extract a location from the different algorithm first and second character recognition results where character recognitions from the different algorithm first and second character recognition results do not coincide* with each other, ... *if the extracted non-coinciding location has a different number of recognized characters, to output* at the extracted non-coinciding location recognized characters *based upon either the first character recognition result or the second character recognition result according to a prescribed standard*, ... *if the extracted non-coinciding location has a same number of recognized characters, to output* at the extracted non-coinciding location *recognized characters with a higher evaluation value* according to the first and second character recognition results." The Office Action page 6 relies on Shirasaki FIG. 33, step G6, however, Shirasaki column 13, lines 56-61 discusses that the expression "plural recognition results" refers to a plurality of conversion candidates from a single character recognition unit 133. In other words, although Shirasaki discusses correcting a misrecognized character, Shirasaki does not use "*a second character recognition algorithm different from the first character recognition algorithm, where each character recognition*

algorithm produces ~~its own~~a first and a second character recognition result, respectively

... to output the recognized characters while designating the extracted non-coinciding

location of the non-coinciding character recognitions by the first and second character

recognition algorithms."

Further, Arai fails to disclose or suggest the claimed present invention's features as recited in amended independent claims 2, 15 and 16.

Dependent claims are patentably distinguishing over the relied upon references at least due to their dependencies from the independent claims or recite patentably distinguishing features of their own. In view of the claim amendments and remarks withdrawal of the rejection of pending claims and allowance of pending claims is respectfully requested.

<u>NEW CLAIM 21</u>

In contrast to Hotta, Shirasaki, and Arai, the claimed present invention as recited in new independent claim 21 provides:

> 21. (NEW) An apparatus, comprising:
>
> a *plurality of different algorithm character recognizers to recognize characters in a same text and to output a plurality of respective character recognition results*; and
>
> a programmed computer processor to control the apparatus according to a process comprising:
>
> > *extracting a location from the plurality of character recognition results where character recognitions from the plurality of different algorithm character recognizers do not coincide* with each other,
> >
> > wherein *if the extracted non-coinciding location has a different number of recognized characters, to output* at the extracted non-coinciding location recognized characters *based upon one of the character recognition results according to a prescribed standard*, and
> >
> > wherein if *the extracted non-coinciding location has a same number of recognized characters, to output* at the extracted non-coinciding location *recognized characters with a higher evaluation value according to the plurality of character recognition results*; and
>
> outputting the recognized characters *while designating the extracted non-coinciding location of the non-coinciding character recognitions by the plurality of different algorithm character recognizers* (emphasis added).
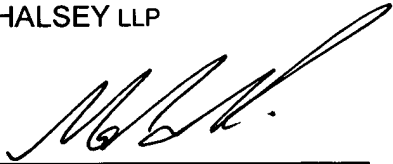
For example, the present Application page 22, line 1 to page 25, line 15 and FIGS. 5 (steps 17, 18), 9 and 10, provide support for the new claim 21.

CONCLUSION

If there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

Respectfully submitted,
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